

buried ligature none of the operations that are now performed would be possible.

In the pre-Listerian epoch secondary hemorrhage was very common and it was not an unusual sequel to operations. Vessels were ligated with silk ligatures which were allowed to remain long; with the subsequent infection that was very common erosions of the larger vessels were frequent, and when the ligature cut into the lumen of the vessel secondary hemorrhage occurred. This was one of the conditions that Lister encountered, and by following the precept of the doctrine of *ergo hoc post propter hoc* he arrived at the conclusions that have exercised an influence upon surgery so great as not to be reckoned with.

He had observed at an early date that a blood clot in the absence of fermentative changes underwent organization. He also recognized that a piece of dead bone which lay exposed in the bottom of the wound of a compound fracture was absorbed instead of being exfoliated, as was the case in a septic wound. This, together with other observations, raised the question as to whether the ligature might not be cut and allowed to remain buried in the wound, for it seemed to him that organic material freed from septic organisms might be absorbed as occurred with bone and blood.

On December 12, 1867, which is a memorable day in surgery, he tied the carotid artery of a horse with silk that had been steeped in a watery solution of carbolic acid. The ends were cut short and the wound, which had been treated with antiseptics, healed immediately. The success of the experiment justified the application of the principle to man, and on January 29, 1868, Lister ligated the external iliac artery with a silk ligature that had been saturated with pure carbolic acid. The ends were cut short and the wound was dressed antiseptically, with the result that the healing was perfect. On December 31, 1868, he used the first catgut ligature saturated with pure carbolic acid, and from this time dates the new era in surgery.

Lister also introduced the drainage tube, which in itself is no small contribution.

There are two volumes, entitled "The Collected Papers of Lister," that give a full account of all the work that he has done.

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REMOVAL OF THE CERVICAL GLANDS IN MALIGNANT DISEASE OF THE HEAD AND FACE.

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No operation for removal of cancers of the head and face can offer any hope of permanent cure, in the majority of cases, unless the lymph glands that drain the affected area, and, as far as possible, the intervening lymphatics, are thoroughly removed. The gland-bearing tissues and, if feasible, the original growth, should be removed in one mass so as to avoid cutting or crushing the cancerous material and implanting or forcing cancer cells into the healthy tissues.

In order to accomplish this, it is wise not to consider the glands directly in the dissection, but

to study the fascias and areolar tissue whose removal would carry with them the glands draining the affected area. The surgeon should decide from the location and extent of the growth, and the palpable gland involvement, which groups of glands should be removed. The deep fascia covering the area containing these is uncovered by the turning back of suitable skin flaps, and removed together with the septa that leave its under surface and all areolar tissue and fat that lie between it and those deep structures that are to be left.

The deep fascia of the face, closely attached to the platysma, sweeps over the mandible, and being joined by numerous fibers that are attached to the lower border of the bone, forms a broad, dense sheet that covers the triangles of the neck.

It is thickest where covered by the platysma myoides and thinnest over the upper part of the posterior triangle.

It is particularly dense at the posterior angle of the jaw, where it sends strong fibers backward to form the stylo-maxillary ligament and splits to invest the parotid gland, which extends a varying distance downward between the two layers. At the anterior border of the sterno-mastoid it sends back a thin septum to form the posterior layer of the sheath of the muscle. Below it is attached to the clavicle.

About one-half inch posterior to the angle of the jaw and superficial to the deep fascia, the infra-maxillary branch of the facial nerve dips down on the neck and divides into the branch that supplies the platysma and a small filament which runs upward to the jaw and along its lower edge a short distance and then up to supply the depressor labii inferioris muscle. In the radical operation for cancer the infra-maxillary nerve is entirely removed, but in removing tuberculous glands many branches may be saved by sectioning the fascia as far as possible below the jaw and turning it upward.

The cervical lymph glands are divided into the following groups: The submental lie in a small mass of areolar tissue and fat, between the deep fascia and mylo-hyoid muscle and the two bellies of the digastric. They drain the lip and chin, the anterior part of the lower gum and floor of the mouth and the tip of the tongue.

The lower facial glands are situated below the fascia and around the facial vessels as they run over the jaw.

The submaxillary lie on the external anterior surface of the submaxillary gland and sometimes extend in a small group back of the deep fascia down to the hyoid bone.

To certainly remove them, the submaxillary gland must be taken away with the fat and fascia of this region.

These glands are liable to be infected in almost any cancer of the face and gums and anterior half of the tongue.

The external jugular glands lie on the surface of the deep fascia back of the platysma and below the parotid gland. They surround the external jugular vein for a varying distance, sometimes extending to its middle.

As they receive vessels from the submaxillary lymph glands, the indication for their removal is the same, and this is accomplished when the deep fascia is dissected off the sterno-mastoid.

The parotid glands lie partly in the substance of the parotid and partly under the anterior layer of its sheath; they are not often involved in the operable cancers.

The upper deep anterior cervical form a group surrounding the spinal accessory nerve and lying in front of the internal jugular vein, the external and internal carotid and common carotid arteries down to the omo-hyoid muscle. I have sometimes found a few glands behind the external carotid and the chain may extend along the jugular vein to the base of the skull. These latter must be attacked above the digastric muscle. This group must be removed in all cases, and if adherent to the sterno-mastoid muscle or internal jugular, these latter must be contained in the block.

The lower deep anterior cervical lie below the omo-hyoid, extending along the internal jugular, to its junction with the subclavian. They receive branches from the upper chain and should always be removed when this upper group is palpably enlarged; they also receive branches directly from the tongue, and should therefore always be removed in cancer of this organ.

The glands of the posterior triangle form a large group that extends along the posterior border of the sterno-mastoid, and also in a fan-shaped group through the posterior triangle to the clavicle. These lie over the brachial plexus and deep cervical muscles and surround the spinal accessory nerve and branches of the cervical plexus. This group is, as a rule, only involved late in the disease, and its removal is more easily made in block with the other glands if the sterno-mastoid muscle is included.

I have seen recently a recurrence in glands of this group in a patient in whom I had done a radical dissection for cancer of the jaw six months before. The involvement of the glands of the anterior triangle were so slight that I had not thought it necessary to extend the dissection to the posterior group.

Before beginning a radical operation one should decide, as far as possible, which groups to remove. If the cancer is located on the lower lip, the supra-hyoid, the external jugular and the superior anterior carotid of both sides are probably involved. If the latter are palpable, it is probable that some cells have invaded the next group and the lower anterior cervical, and sometimes the glands of the posterior must be included in the block.

In cancer of the tongue, all the accessible glands of the affected side and those of the superior carotid triangle of the sound side should be included.

These operations can frequently be done under local anesthesia, but even if the decision is made to employ a general anesthetic, the operative area should be carefully blocked off with novocain and adrenalin to lessen bleeding and straining during the operation and prevent shock after it. Bleeding is also greatly lessened by having the patient in the sitting position during the operation and by

sequestration of blood in the lower extremities after the method of Dawbarn. It is also essential that too much be not attempted at one sitting, and these operations should be divided into such stages as the location and extent of the growth and the condition of the patient indicate. A record of the patient's blood pressure should be kept during the operation and used as an indication of the extent of removal in each stage. It is better to do these operations in two, three, four or even five stages and have a live and fairly comfortable patient, than do them in one or two and place the patient in very serious danger.

Any form of incision that will permit the separation of such flaps as will expose the deep fascia covering the block to be removed will prove satisfactory. This fascia is then incised along the boundaries of the block, and together with the underlying areolar tissue and fat, dissected off the deep tissues. When any of these tissues, such as the mandible, the sterno-mastoid or other muscle, the jugular vein, or other structure not essential to the continuance of life, are involved, they must be raised with the fascias.

The dissection should be carried from the sides of the block and converge to the area of greatest adherence and involvement.

The upper boundary of every neck dissection runs along the lower border of the mandible and along a line extending from the angle of the jaw to the mastoid process.

In cutting through the fascia, numerous vessels are severed, particularly in the region of the parotid gland. Much time can be saved here if a blunt dissector is gently inserted back of the fascia along this line and used as a guide for clamps between which the section may be made. This method will sacrifice the lower part of the parotid gland, but a tight running suture will prevent bleeding from the numerous severed veins and leakage of saliva. When the posterior triangle is not to be invaded, the posterior incision in the fascia is made along the posterior border of the sterno-mastoid. The fascia is dissected off the muscle, taking with it the external jugular vein, which has already been ligated above, and the external jugular glands. The muscle is now separated from the posterior layer of its sheath; above, the digastric muscle will now come into view. The fat and tissue surrounding the spinal accessory nerve is dissected off. The jugular vein is now exposed and carefully cleared of all tissue; the thyroid and facial branches, which usually enter by a common trunk, are carefully ligated. The common and external carotids are now dissected; the facial artery and sometimes the external carotid should be ligated and severed. The inter-digastric triangle is emptied and the submaxillary gland is pulled down and freed by the division of Wharton's duct, which should be carefully ligated with fine chromic catgut in order to prevent infection traveling from the mouth. The fascias are now dissected off the muscles of the supra-hyoid and sub-hyoid regions and pharynx, and the block is complete.

As much of the space left by the removal of this mass as possible is obliterated by suturing the

various muscles, such as the sterno-mastoid and digastric together.

An attempt is made to fill the rest with an aseptic blood clot. The skin wounds should be carefully sutured and ample drainage should be provided by drainage tubes introduced through stab wounds at proper points. These should not be removed for several days or until all flow of lymph from the cut lymphatics and serum from the contracting blood clots has ceased.

At the first sign of infection the wound should be opened and carefully packed with iodoform gauze.

I have had one case of hemorrhage from the internal jugular as a result of ulceration of the wall of the vein following infection. After gauze tamponing the patient recovered.

The patient should be kept in the sitting posture for several days following the operation.

BASIC PRINCIPLES IN ECZEMA.*

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Eczema was defined by Bateman 100 years ago as "a non-contagious eruption, generally the effect of an irritant, whether externally or internally applied, but occasionally produced by a great variety of irritants in persons whose skin is constitutionally very irritable." It has been said that this definition cannot be improved upon today.¹

Since Bateman three important doctrines have claimed supremacy. First, Hebra and the Vienna school contended strongly that eczema is of external origin. Following upon this came the French school with the claim that it is of internal or diathetic origin. Later Unna promulgated the theory that all eczemas can be traced to a microbic origin. Both the Vienna and French schools attracted many followers, but Unna's claims never gained wide acceptance. In recent years the most commonly held views have been that eczema is exactly what Bateman called it a century ago, viz., "the effect of an irritant whether externally or internally applied." There has now appeared a tendency toward the idea of exclusively external causation. To what extent this view is tenable a consideration of some of the basic principles of the affection will possibly help us to decide.

No discussion of eczema can be intelligently pursued until there is a common understanding as to the distinction between eczema and dermatitis.

Morris² says: "Eczema is a catarrhal inflammation of the skin originating without visible external irritation. This definition excludes all forms of inflammation caused by chemical or mechanical irritants. The artificial dermatitis so produced is identical anatomically with the eczematous process and causes indistinguishable lesions, but is not eczema. It is evident therefore that there is something more in eczema than in inflammation of the skin due to a local and transient cause—a quantity beyond this—a pathologic x which may be some invisible source of irritation, some constitutional peculiarity or both of these factors."

This reasoning seems to Pusey³ "a *reductio ad absurdum*, because it amounts to saying that two things which are the same are different because they are produced differently."

In reality the differentiation of eczema and dermatitis is only a convention of nomenclature whereby those catarrhal skin inflammations of known external cause are labeled dermatitis and those of unknown cause are branded eczema. No one can refute, however, the observations of Morris as to the unknown quantity in eczema. But the same observations apply equally in many cases of dermatitis of known external cause. Why, for example, do certain individuals react with acute inflammations to contact with poison oak, poison ivy or certain proprietary hair dyes while others remain unaffected? Assuredly there is some pathologic x, whether we term it susceptibility or immunity or what not. Now if we assume that certain eczemas are of definite and known external origin, and if we admit, as I think we must, that the lesions of dermatitis from poison ivy, for example, are anatomically identical with those of acute eczema, what justification is there for calling them by different names? Absolutely none. The only logical distinction is to limit the term dermatitis to those reactions due to irritants which act upon all alike and which subside spontaneously when the offending material is removed.

Some chemical substances—sulphuric acid, for example—will cause a definite reaction in any skin. Other chemicals—iodoform, for example—will cause a reaction only in certain skins. The essential problem in the etiology of eczema, I take it, is the determination of the reason for this—a reason which is not found in any mere generalities.

Granting that the exciting cause of eczema is sometimes or even always from without, we must search for a predisposing cause either within the body or in the intimate metabolism of the skin itself. The proponents of the theory that eczema is of exclusively external origin say that here is an eczematous reaction, the subject has been irritated with some definite chemical or other noxious substance and hence the reaction comes from without. What they fail to explain is why the particular subject reacts while others who are subjected to the same external influences fail to react.

Certain external agents are well known to be provocative of eczematous reactions, *e. g.*, atmospheric conditions, winds, inclemencies of weather, irritating excretions, chemicals, plants, dyestuffs, parasites, various substances used in the arts, sugar, cement, etc., but, above all, traumatism. Most of these are easily traceable. Occasionally we meet an eczematous reaction of the face and neck, perhaps of even more extensive distribution, due to the use of some proprietary hair dye. Persistent and recurrent patches on the faces of middle aged females should arouse our suspicion of such application. The information is almost never volunteered and quite frequently it is denied.

Aside from purely outward causes the inherent quality of the skin itself must be reckoned with. In both infancy and old age the skin is particularly

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